BAY AREA REGIONAL RAIL PLAN CONCEPTUAL ALTERNATIVES TASK

Technical Memorandum 4.m Screening Criteria



August 17, 2007





Tech Memo 4m: Screening Criteria

Scope of work

Develop environmental screening criteria appropriate to assess study alternatives at a conceptual level. These criteria shall include overall air quality implications of the study alternatives, reflecting, among other things, the effect of trip diversions from other modes.¹

Initiate work on HSR links first as alignment plans are already available. Given that alignment engineering will be accomplished for new alignments only, Consultant will adapt screening criteria to conform to available engineering definition (e.g., evaluate existing alignments based upon potential cross-sectional requirements for capacity/infrastructure expansion.)

General

Tables 1 through 4 provide an evaluation matrix for the corridors that comprise each of the four Regional Rail Alternatives. Tables 1 and 2 include Regional Rail Alternatives 1 and 2 – without High Speed Rail. Tables 3 and 4 include Regional Rail Alternatives 3 and 4 – with High Speed Rail from the South and from the East. Due to its size, Table 1 is divided into two tables – Table 1A and 1B.

The tables provide the name of the alternative, the corridors names included in the alternative, and a general description for each corridor. A relative rating (consumer reports symbol) representing a continuum from least favorable to most favorable is shown for each corridor for each of the following criteria: (1) connectivity, (2) disruption to existing transit, (3) impacts to freight service, (4) natural resource impacts, (5) environmental justice, and (6) section 4(f) impacts. For some rows, additional information is provided in text form below the rating. A description of how the ratings were assigned is provided below.

1. CRITERIA RATING MEHODOLOGY

A. Connectivity

The ratings for the connectivity criterion show in relative terms the level of increase in connections to other transit / rail stations / services or increases in connectivity within an existing system (e.g., BART). The more favorable ratings are indicated for those corridor improvements that would introduce higher levels of connectivity with bus transit, ferry service, the SMART Corridor, the Capitol Corridor, Sacramento Regional Transit light rail, Amtrak, BART, Caltrain, Valley Transportation Authority (VTA), ACE, San Francisco Muni, and regional airports.

B. Disruption to Existing Transit

The ratings for the disruption to existing transit criterion show in relative terms the degree to which implementation of the corridor improvements could disrupt existing transit services during construction.

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¹ Note that the ridership and trip diversion values are not yet available and are necessary to determine the air quality implications for each of the alternatives.

					on Criteria for Region ATIVE 1 - REGIONAL					
					HIGH SPEED RAIL	INAIL				
						CORRIDORS				
CRITERIA	CRITERIA	US 101 North (San Francisco - Cloverdale)	North Bay (US 101 to I-80)	I-80 Capitol Corridor (Oakland - Auburn)	East Bay (Oakland - San Jose)	Central Valley	Dumbarton	Tri-Valley	Peninsula (San Francisco - San Jose)	South Counties (San Jose - Santa Cruz/Monterey/Salina
	DESCRIPTION	SMART Corridor - existing ROW	Ignacio to Suisun/Fairfield & St. Helena to Vallejo - existing ROW	Capitol Corridor - existing ROW	Capitol Corridor - existing ROW	Same as HSR Alignment - UPRR	Dumbarton X-ing - Same as HSR	Existing UPRR Alignment + old SP in Niles	Caltrain - Same as HSR Alignment	Caltrain to Gilroy + Salir Monterey & Santa Cr
	Improve connections between	•	•	•	•	•	•	•	•	•
Connectivity	new infrastructure & existing or programmed future transit services	Bus transit, ferry service	Bus transit, SMART Corridor, Capitol Corridor	Bus transit, BART, Sacramento RT	Bus transit, Amtrak, BART, Caltrain, VTA, ACE, OAK Airport	Bus transit, Capitol Corridor, Sacramento RT	Caltrain, Capitol Corridor, ACE	Bus transit, BART, ACE, Capitol Corridor	Bus transit, Capitol Corridor, ACE, VTA, BART, Amtrak, Muni, SFO	Bus transit, Amtrak, Caltrain
Disruption to Existing Transit	Minimize short term disruption to existing transit networks during construction	•	•	0	•	•	•	•	•	•
		No disruption	No disruption	Possible service disruption - Capitol Corridor	Possible service disruption - Capitol Corridor	No disruption	No disruption	No disruption	Possible service disruption - Caltrain	No disruption
Impacts to Freight Service	Minimize conflict between freight & passenger rail services.	•	•	0	0	0	•	•	•	•
		•	•	0	•	•	•	•	•	•
Natural Resource Impacts	Degree of adverse effects on sensitive habitat, water resources & floodplains.	Mostly within rail ROW	Mostly within rail ROW. Possible impacts to wetlands.	Mostly within rail ROW. Possible impacts to SF Bay, US waters, wetlands, sensitive habitat	Mostly within rail ROW. Possible impacts to wetlands, wildlife preserve, sensitive habitat	Mostly within or adjacent to rail ROW	Mostly within rail ROW. Possible impacts to SF Bay waters, wetlands, wildlife preserve, sensitive habitat	Mostly within rail ROW. Possible impacts to urban land uses & sensitive habitat (Niles Canyon)	Mostly within rail ROW. Possible impacts to urban land uses.	Mostly within rail ROW
Environmental Justice	Degree of disproportionate adverse effects on low-income or minority populations.	•	•	•	•	•	•	•	•	•
Section 4(f) Impacts	Level of use of public parkland or wildlife preserves (within 150 feet)	•	•	•	0	•	0	•	•	•
		• 16 parks within 150' • ~0.20 parks/mile	• 6 parks within 150' • ~0.10 parks/mile	23 parks within 150' ~0.20 parks/mile	8 parks within 150' ~0.25 parks/mile	24 parks within 150' ~0.1 parks/mile	4 parks within 150'~ 0.25 parks/mile	2 parks within 150' ~0.05 parks/mile	10 parks within 150' ~ 0.20 parks/mile	10 parks within 150' ~0.10 parks/mile
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				a least E	avorable 🗦 Most Favorab	ale.				

		Table 1B	– Evaluation Criteria	for Regional Rail Ne	etwork		
		AL	TERNATIVE 1 - REG				
			NO HIGH SPE		DT		
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	CRITERIA DESCRIPTION	I-680 (Fremont to Martinez)	Oakland 4th Track	Bay Crossing (Oakland Wye to Geary Corridor)	Bay Crossing (Oakland Wye to Presidio)	Livermore to Greenville	BART to Hercules
CRITERIA		Median I-680	Under Existing BART Alignment	Tube + Townsend + Van Ness + Geary	Tube + Folsom to Van Ness + Lombard to Presidio	I - 580 Median BART Extension	Parallel I-80 (Alt 2)
	Improve connections between	0	•	•	•	•	•
Connectivity	new infrastructure & existing or programmed future transit services	Bus transit	Bus transit. Improvided BART system connectivity.	Bus transit, Capitol Corridor, Caltrain, Muni	Bus transit, Capitol Corridor, Caltrain, Muni	Bus transit, ACE	Bus transit, Capitol Corridor
Disruption to Existing	Minimize short term disruption to existing transit networks during construction	•	0	•	•	•	•
Transit		No disruption	Possible service disruption - BART	Possible service disruption - BART	Possible service disruption - BART	No disruption	No disruption
Impacts to Freight Service	Minimize conflict between freight & passenger rail services.	•	•	•	•	•	•
		•	•	•	•	•	•
Natural Resource Impacts	Degree of adverse effects on sensitive habitat, water resources & floodplains.	Subway or Aerial	Subway	Possible impacts to SF Bay waters	Possible impacts to SF Bay waters	Mainly at-grade in freeway	At-grade in freeway and subway between Richmond and I-80 in San Pablo.
Environmental Justice	Degree of disproportionate adverse effects on low-income or minority populations.	•	•	•	•	•	0
6 II 4/0 T	Level of use of public parkland or	•	•	•	•	•	•
Section 4(f) Impacts	wildlife preserves (within 150 feet)	7 parks within 150'~0.15 parks/mile	0 parks within 150' 0 parks/mile	3 parks within 150' ~0.20 parks/mile	1 park within 150'~0.20 parks/mile	O parks within 150' parks/mile	0 parks within 150' 0 parks/mile
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					Table 2 – Evaluatio							
						ATIVE 2 - REGIONAL	RAIL					
		Γ			NO	HIGH SPEED RAIL	RIDORS					D. D. D. T.
CRITERIA	CRITERIA DESCRIPTION	US 101 North (San Francisco - Cloverdale)	North Bay (US 101 to I-80)	I-80 Capitol Corridor (Oakland - Auburn)	East Bay (Oakland - San Jose)	Central ∀alley	Dumbarton	Tri-Valley	Peninsula (San Francisco - San Jose)	Transbay (SF - Oakland)	South Counties (San Jose - Santa Cruz/Monterey/Salinas)	BART Livermore to Isabel A Station
		SMART Corridor - existing ROW	Ignacio to Suisun/Fairfield & St. Helena to Vallejo - existing ROW	Capitol Corridor - existing ROW	Capitol Corridor - existing ROW	Same as HSR Alignment - UPRR	Dumbarton X-ing - Same as HSR	Existing UPRR Alignment + old SP in Niles	Caltrain - Same as HSR Alignment	Tube	Caltrain to Gilroy + Salinas + Monterey & Santa Cruz	BART Aerial I-580 Me El Charo at grade (UPRR/Stanley to Isa
new infrastr	Improve connections between	•	•	•	•	•	•	•	•	•	0	O
	new infrastructure & existing or programmed future transit services	Bus transit, ferry service	Bus transit, SMART Corridor, Capitol Corridor	Bus transit, BART, Sacramento RT	Bus transit, Amtrak, BART, Caltrain, VTA, ACE, OAK Airport	Bus transit, Capitol Corridor, Sacramento RT	Caltrain, Capitol Corridor, ACE	Bus transit, BART, ACE, Capitol Corridor	Bus transit, Capitol Corridor, ACE, VTA, BART, Amtrak, Muni	Bus transit, BART, Caltrain, Muni, Ferries	Bus transit, Amtrak, Caltrain	Bus transit, ACE
existing	Minimize short term disruption to	•	•	•	0	•	•	•	•	•	•	•
	existing transit networks during construction	No disruption	No disruption	Possible service disruption - Capitol Corridor	Possible service disruption - Capitol Corridor	No disruption	No disruption	No disruption	Possible service disruption - Caltrain	No disruption	No disruption	No disruption
Impacts to Freight Service	Minimize conflict between freight & passenger rail services.	•	•	0	0	•	•	0	•	•	•	•
		•	•	0	•	•	•	•	•	•	•	•
Natural Resource Impacts	Degree of adverse effects on sensitive habitat, water resources & floodplains.	Mostly within rail ROW	Mostly within rail ROW. Possible impacts to wetlands.	Mostly within rail ROW. Possible impacts to SF Bay, US waters, wetlands, sensitive habitat	Mostly within rail ROW. Possible impacts to wetlands, wildlife preserve sensitive habitat	Mostly within or adjacent to rail ROW	Mostly within rail ROW. Possible impacts to SF Bay waters, wetlands, wildlife preserve, sensitive habitat	Mostly within rail ROW. Possible impacts to urban land uses & sensitive habitat (Niles Canyon)	Mostly within rail ROW. Possible impacts to urban land uses.	Possible impacts to SF Bay waters	Mostly within rail ROW	Mostly within rail & highway ROW
Environmental Justice	Degree of disproportionate adverse effects on low-income or minority populations.	•	•	•	•	•	•	•	•	•	•	•
Section 4(f) Impacts	Level of use of public parkland or wildlife preserves (within 150 feet)	•	•	•	0	•	0	•	•	•	•	•
		16 parks within 150' ~0.20 parks/mile	6 parks within 150' ~0.10 parks/mile	23 parks within 150' ~0.20 parks/mile	8 parks within 150' ~0.25 parks/mile	24 parks within 150' ~ 0.10 parks/mile	4 parks within 150' ~0.25 parks/mile	2 parks within 150' ~0.05 parks/mile	10 parks within 150' ~ 0.20 parks/mile	1 parks within 150'~0.15 parks/mile	10 parks within 150' ~0.10 parks/mile	• 1 park within 150' • ~0.20 parks/mile
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					• Least F	avorable → Most Favora	ble					

				Table 3 – Evaluation						
				ALTERNATIVE 3 - R		IGH SPEED RAIL TH - PACHECO PAS:				
						CORRIDORS				
	CRITERIA	US 101 North (San Francisco - Cloverdale)	North Bay (US 101 to I-80)	I-80 Capitol Corridor (Oakland - Auburn)	East Bay (Oakland - San Jose)	Central Valley	Dumbarton	Tri-Valley	Peninsula (San Francisco - San Jose)	South Counties (San Jose - Santa Cruz/Monterey/Salinas)
CRITERIA	DESCRIPTION	SMART Corridor - existing ROW	Ignacio to Suisun/Fairfield & St. Helena to Vallejo - existing ROW	Capitol Corridor - existing ROW	HSR Alignment	HSR Alignment (UPRR)	Dumbarton Xing - HSR Alignment	Existing UPRR Alignment + old SP in Niles	Caltrain HSR Alignment	Caltrain to Gilroy + Salinas + Monterey & Santa Cruz
	Improve connections between	•	•	•	•	•	•	•	•	•
Connectivity	new infrastructure & existing or programmed future transit services	Bus transit, ferry service	Bus transit, SMART Corridor, Capitol Corridor	Bus transit, BART, Sacramento RT	Bus transit, Amtrak, BART, Caltrain, VTA, ACE, OAK Airport	Bus transit, Capitol Corridor, Sacramento RT	Caltrain, Capitol Corridor, ACE	Bus transit, BART, ACE, Capitol Corridor	Bus transit, Capitol Corridor, ACE, VTA, BART, Amtrak, Muni	Bus transit, Amtrak, Caltrain
Disruption to Existing	Minimize short term disruption to existing transit networks during construction	•	•	0	•	•	•	•	•	•
Transit		No disruption	No disruption	Possible service disruption - Capitol Corridor	No disruption	No disruption	No disruption	No disruption	Possible service disruption - Caltrain	No disruption
Impacts to Freight Service	Minimize conflict between freight & passenger rail services.	•	•	0	•	•	•	0	•	•
		•	•	0	•	•	0	•	•	•
Natural Resource Impacts	Degree of adverse effects on sensitive habitat, water resources & floodplains.	Mostly within rail ROW	Mostly within rail ROW. Possible impacts to wetlands.	Mostly within rail ROW. Possible impacts to SF Bay, US waters, wetlands, sensitive habitat	Mostly within or adjacent to rail or highway ROW	Mostly within or adjacent to rail ROW	Possible impacts to SF Bay waters, wetlands, wildlife preserve, sensitive habitat	Mostly within rail ROW or tunnel. Possible impacts to urban land uses.	Mostly within rail ROW. Possible impacts to urban land uses.	Mostly within rail ROW
Environmental Justice	Degree of disproportionate adverse effects on low-income or minority populations.	•	•	•	•	•	•	•	•	•
Section 4(f) Impacts	Level of use of public parkland or wildlife preserves (within 150 feet)	•	•	•	0	•	0	0	•	•
		• 16 parks within 150' • ~0.20 parks/mile	6 parks within 150' ~0.10 parks/mile	23 parks within 150' ~0.20 parks/mile	• 10 parks within 150' • ~0.30 parks/mile	• 24 parks within 150' • ~0.10 parks/mile	4 parks within 150' ~0.25 parks/mile	7 parks within 150' ~0.15 parks/mile	• 10 parks within 150' • ~0.20 parks/mile	• 10 parks within 150' • ~0.10 parks/mile
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				• Least F	avorable 🗦 Most Favora	ble				

					n Criteria for Regior					
					EGIONAL RAIL + HI					
		I	HIGI	H SPEED RAIL ENTI	RY FROM THE EAST	Γ - ALTAMONT PASS CORRIDORS	5			
	CRITERIA	US 101 North (San Francisco - Cloverdale)	North Bay (US 101 to I-80)	I-80 Capitol Corridor (Oakland - Auburn)	East Bay (Oakland - San Jose)	Central Valley	Dumbarton	Tri-Valley	Peninsula (San Francisco - San Jose)	South Counties (San Jose - Santa Cruz/Monterey/Salinas)
CRITERIA	DESCRIPTION	SMART Corridor - existing ROW	Ignacio to Suisun/Fairfield & St. Helena to Vallejo - existing ROW	Capitol Corridor - existing ROW	HSR Alignment	HSR Alignment - UPRR	Dumbarton X-ing - HSR Alignment	HSR Alignment	Caltrain - HSR Alignment	Caltrain to Gilroy + Salina + Monterey & Santa Cru
	Improve connections between	•	•	•	•	•	•	•	•	•
Connectivity	new infrastructure & existing or programmed future transit services	Bus transit, ferry service	Bus transit, SMART Corridor, Capitol Corridor	Bus transit, BART, Sacramento RT	Bus transit, Amtrak, BART, Caltrain, VTA, ACE, OAK Airport	Bus transit, Capitol Corridor, Sacramento RT	Caltrain, Capitol Corridor	Bus transit, BART, ACE, Capitol Corridor	Bus transit, Capitol Corridor, ACE, VTA, BART, Amtrak, Muni	Bus transit, Amtrak, Caltrain
Disruption to Existing	Minimize short term disruption to existing transit networks during construction	•	•	0	•	•	•	•	•	•
Transit		No disruption	No disruption	Possible service disruption - Capitol Corridor	No disruption	No disruption	No disruption	Possible service disruption - ACE	Possible service disruption - Caltrain	No disruption
Impacts to Freight Service	Minimize conflict between freight & passenger rail services.	•	•	0	•	•	•	•	•	•
		•	•	0	•	•	0	•	•	•
Natural Resource Impacts	Degree of adverse effects on sensitive habitat, water resources & floodplains.	Mostly within rail ROW	Mostly within rail ROW. Possible impacts to wetlands.	Mostly within rail ROW. Possible impacts to SF Bay, US waters, wetlands, sensitive habitat	Mostly within or adjacent to rail or highway ROW	Mostly within or adjacent to rail ROW	Possible impacts to SF Bay waters, wetlands, wildlife preserve, sensitive habitat	Mostly within rail ROW or tunnel. Possible impacts to urban land uses.	Mostly within rail ROW. Possible impacts to urban land uses.	Mostly within rail ROW
Environmental Justice	Degree of disproportionate adverse effects on low-income or minority populations.	•	•	•	•	•	•	•	•	•
Section 4(f) Impacts	Level of use of public parkland or wildlife preserves (within 150 feet)	•	•	•	0	•	0	•	•	•
		• 16 parks within 150' • ~0.20 parks/mile	6 parks within 150' ~0.10 parks/mile	23 parks within 150' ~0.20 parks/mile	• 10 parks within 150' • ~0.30 parks/mile	• 24 parks within 150' • ~0.10 parks/mile	4 parks within 150' ~0.25 parks/mile	• 7 parks within 150' • ~0.15 parks/mile	10 parks within 150' ~0.2 parks/mile	• 10 parks within 150' • ~0.1 parks/mile
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				• Least F	avorable 🗦 Most Favora	ble				

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C. Impacts to Freight Service

The impacts to freight service rating indicates the relative level that implementation of the regional rail alternative would disrupt or adversely affect freight services in each corridor, particularly during the short term construction period.

D. Natural Resource Impacts

Natural resource impact ratings are based on an environmental scan of the regional rail alignments and corridors. Those corridors passing though environmentally sensitive areas (e.g., the San Francisco Bay, wildlife preserves, wetland areas, floodplains, and other sensitive habitat) were rate as the least favorable. Notes are provided for each cell to indicate the sensitive areas of concern. The extent to which the improvements are within an existing right-of-way was taken into consideration, as well as the length of the corridor within the environmental sensitive areas. The environmentally sensitive areas along the various corridors resulted in increased capital costs for these corridors, as reflected in Technical Memorandum 4c.

E. Environmental Justice

Regulatory Context

Executive Order 12898, known as the federal environmental justice policy, requires federal agencies to address to the greatest extent practicable and permitted by law the disproportionately high adverse human health and environmental effects of their programs, policies, and activities, on minority and low-income populations in the United States. Federal agency responsibilities under this EO also apply to Native American programs. Department of Transportation (DOT) Order 5610.2 on environmental justice defines "disproportionately high and adverse effect on minority and low-income populations" to mean an adverse effect that is predominately borne by a minority population and/or a low-income population or that would be suffered by the minority population and/or low-income population and that is appreciably more severe or greater in magnitude than the adverse effect that would be suffered by the nonminority population and/or non-low-income population (Department of Transportation Order 5610.2, Appendix Definitions, sub.[g]).

Evaluation Matrix Methodology

For corridors shared with the California High Speed Rail Program EIS/EIR, the HSR information was utilized. For Regional Rail only corridors, 2000 Census Data by Census Tract was gathered for environmental justice impacts within proposed alignments.

If a census tract block group contained 50 percent or more minority or low-income population; or the percentage of minority or low-income population in any census tract block group was more than 10 percentage points greater than the average in the city and/or county in which the census tract block group is located, it was deemed as a high potential for environmental justice impacts.

The assessment of potential for impacts on minority and low-income populations considered the size and type of right-of-way associated with the regional rail improvements. For example, if the proposed improvement would be mostly within an existing right-of-way, the potential for adverse impacts would be lower. If the corridor improvements would be on new right-of-way, the

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potential for adverse impacts may be higher. The corridor improvements are in many cases within or adjacent to existing transportation rights-of-way to avoid or reduce potential impacts on natural resources and existing communities to the extent feasible and practicable.

In some cases, the minority and low-income thresholds identified above were met or exceeded, but the geographic area (of the block group) was large and sparsely populated. In these areas, the minority and/or low income populations are distant from the proposed corridor improvements. For these areas, the environmental justice impacts were considered as low, given the distance between the environmental justice populations and the corridor improvements.

F. Section 4(f) Impacts.

Regulatory Context

Section 4(f) of DOT Act of 1966 (49 U.S.C. § 303) states the following:

- (a) It is the policy of the United States government that special effort be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.
- (b) The Secretary of Transportation shall cooperate and consult with the Secretaries of the Interior, Housing and Urban Development, and Agriculture, and with the states, in developing transportation plans and programs that include measures to maintain or enhance the natural beauty of lands crossed by transportation activities or facilities.
- (c) The Secretary may approve a transportation program or project (other than any project for a park road or roadway under Section 204 of Title 23) requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local officials; or land of an historic site of national, state, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area refuge, or site) only if,
 - (1) there is no prudent and feasible alternative to using that land; and
 - (2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

Evaluation Matrix Methodology

For corridors shared with the California High Speed Rail Program EIS/EIR, the HSR information was utilized. For Regional Rail only corridors, a search was made on Google Earth, AAA, and Thomas Bros mapping for parks within 150 feet of the alignment. The number of parks within 150 feet of the rail alignment was divided by the length of the corridor to provide a number of parks per mile value. A rating was then assigned as follows:

- 0.00 0.10 parks/mile → High (Most Favorable)
- 0.11 0.20 parks/mile → Medium
- 0.21 0.30 parks/mile → Low (Least Favorable)

Given the geographic extent of the corridors, cultural/historic information was not included in this Section 4(f) evaluation.